

TDA4445A
TDA4445B

SOUND IF AMPLIFIER

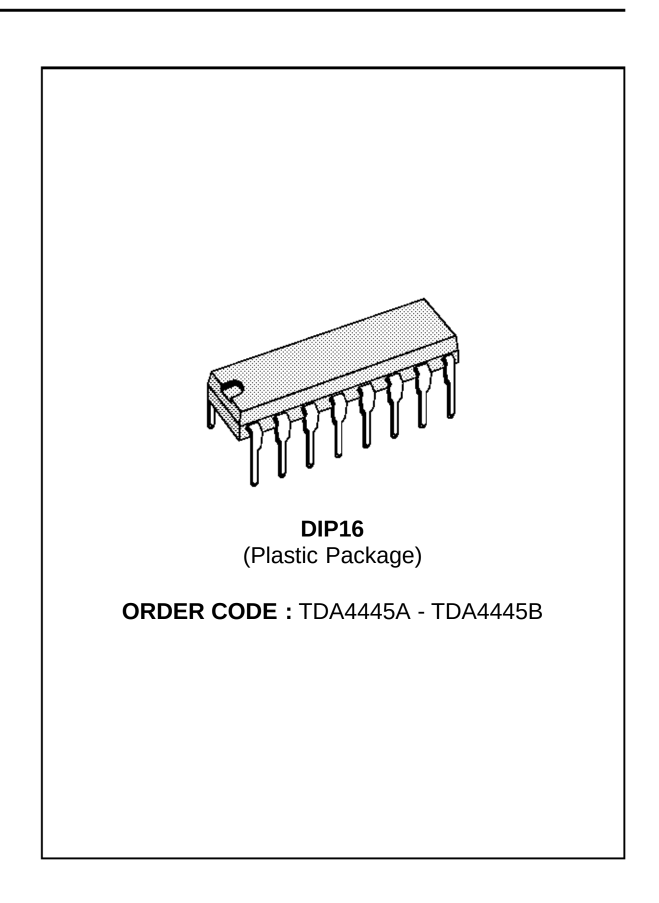
- QUADRATURE INTERCARRIER DEMODULATOR
- VERY HIGH INPUT SENSITIVITY
- GOOD SIGNAL TO NOISE RATIO
- FAST AVERAGING AGC
- IF AMPLIFIER CAN BE SWITCHED OFF FOR VTR MODE
- GOOD AM SUPPRESSION
- OUTPUT SIGNAL STABILIZED AGAINST SUPPLY VOLTAGE VARIATIONS
- VERY FEW EXTERNAL COMPONENTS

DESCRIPTION

TDA4445A :
Sound IF amplifier, with FM processing for quasi parallel sound system.

TDA4445B :
Sound IF amplifier, with FM processing and AM demodulator, for multi-standard sound TV appliances.

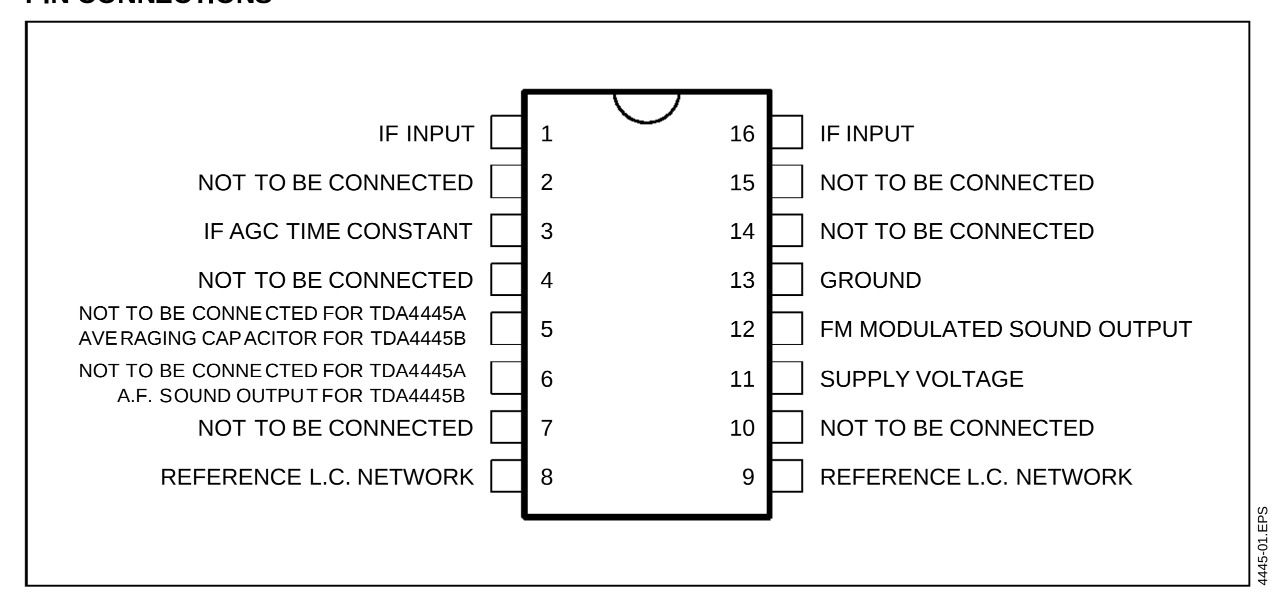
TDA4445B additionnal :
Bistandard applications (B/G and L)
No adjustment of the AM demodulator
Low AM distortion



DIP16
(Plastic Package)

ORDER CODE : TDA4445A - TDA4445B

PIN CONNECTIONS



BLOCK DIAGRAMS

TDA4445A

Vcc
LC NETWORK
FM MODULATED SOUND OUTPUT
IF INPUT
IF AGC TIME CONSTANT

TDA4445B

Vcc
LC NETWORK
FM MODULATED SOUND OUTPUT
IF INPUT
AF SOUND OUTPUT
IF AGC TIME CONSTANT
AVERAGING CAPACITOR

4445-02.EPS / 4445-03.EPS

GENERAL DESCRIPTION

This circuit includes the following functions :

- Three symmetrical and gain controlled wide band amplifier stages, which are extremely stable by quasi DC coupling without feedback.
- Averaging AGC with discharge control circuit
- AGC voltage generator

Quasi parallel sound operation :

- High phase accuracy of the carrier signal processing, independent from AM
- Linear quadrature demodulator
- Sound-IF-amplifier stage with impedance converter

AM-Demodulation (only TDA4445B) :

- Carrier controlled demodulator
- Audio frequency stage with impedance converter
- Averaging low pass AGC

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter		Value	Unit
V_{CC}	Supply Voltage Range	Pin 11	15	V
I_{CC}	Supply Current	Pin 11	70	mA
V_{ext}	External Voltages	Pin 3 Pin 12	12 8	V V
V_{ext}	External Voltages TDA4445A - TDA4445B TDA4445B	Pin 5 Pin 6	8 8	V V
P_{tot}	Power Dissipation		1	W
T_j	Junction Temperature		125	°C
T_{amb}	Ambient Temperature Range		0, + 70	°C
T_{stg}	Storage Temperature Range		– 25, + 125	°C

4445-01.TBL

THERMAL DATA

Symbol	Parameter	Value	Unit
$R_{th(j-a)}$	Junction-ambient Thermal Resistance	70	°C/W

4445-02.TBL

ELECTRICAL OPERATING CHARACTERISTICS

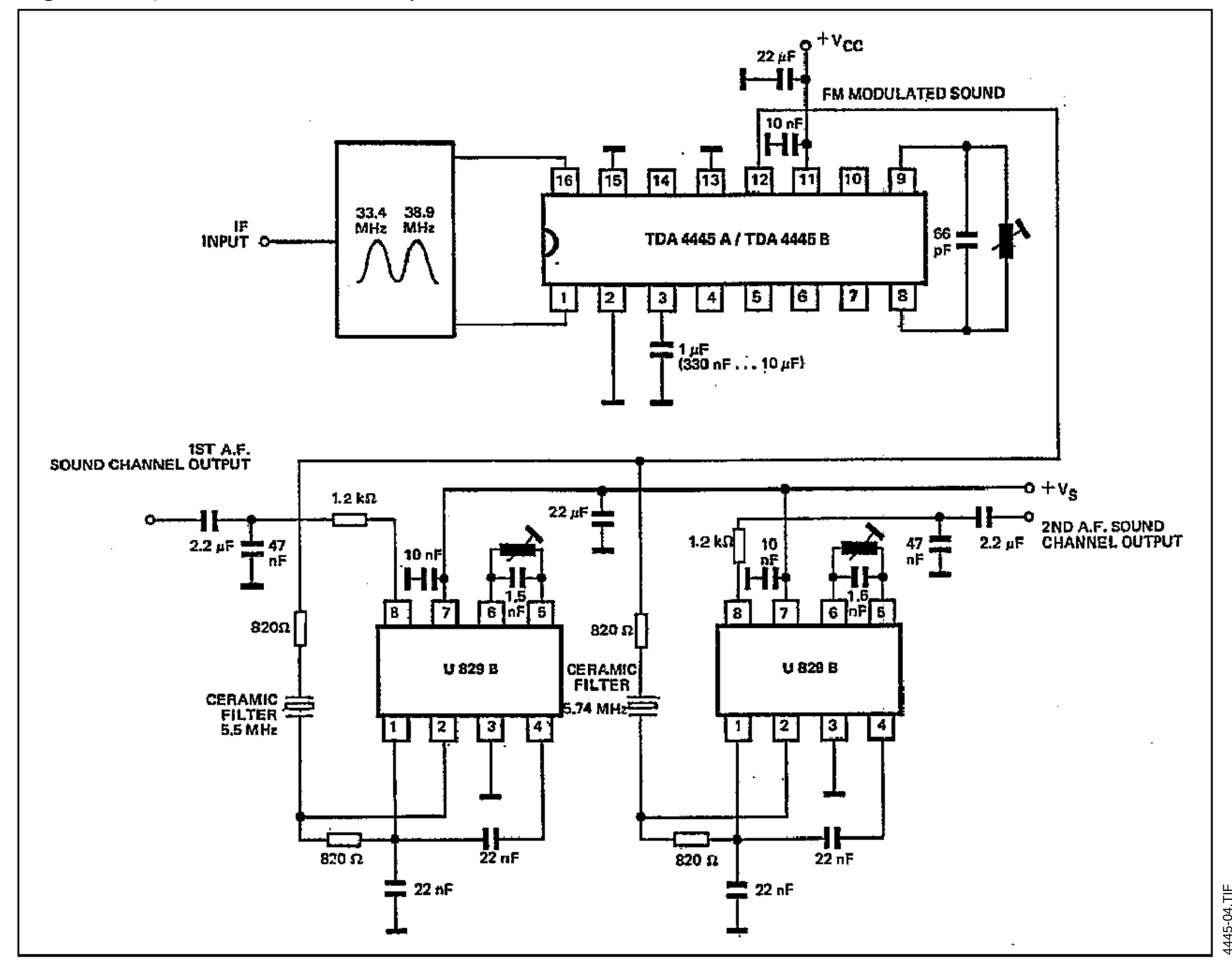
T_{amb} = + 25°C, V_{CC} = 12V (unless otherwise specified)

Symbol	Parameter		Min.	Typ.	Max.	Unit
DC CHARACTERISTICS						
V_{CC}	Supply Voltage	Pin 13	10	12	15	V
I_{CC}	Supply Current (V_3 = 3.5V)	Pin 11		45	60	mA
V_O	DC Output Voltage (V_3 = 3.5V)	Pin 12	4.25	5	5.75	V
I	Output DC Current (V_3 = 3.5VV_{11} = 12V)	Pin 12	1		2	mA
R	Input Impedance	Pins 1-16		2		kΩ
C	Input Impedance	Pins 1-16		2		pF
V	Switch off Control Voltage for VTR Mode	Pin 3	9		10	V
I	Switch off Control Current for VTR Mode	Pin 3			150	µA
AGC CHARACTERISTICS						
Δ_{GIF}	IF AGC Range			62		dB
QUASI PARALLEL SOUND OPERATION (f_{PC} = 38.9MHz, f_{SC1} = 33.4MHz, f_{SC2} = 33.16MHz, PC/SC_1 = 13dB, PC/SC2 = 20dB, PC unmodulated)						
V_I	Min. Input Voltage (5.5MHz - Output Signal - 3dB)	Pins 1-16		70		μV_{eff}
V_I	Max. Input Voltage (5.5MHz - Output Signal + 1dB)	Pins 1-16		90		mV_{eff}
V_O	Sound-IF-output Voltage (V_{1-16} = 20mV_{eff} SC unmodulated) 5.5MHz Output Voltage 5.74MHz Output Voltage	Pin 12	 200 100		 400 300	 mV_{eff} mV_{eff}
$\frac{S+N}{N}$	Signal to noise ratio measured according to CCIR 468-2 Picture Modulation Ratio 90%, Reference signal (V_{1-16} = 10mV), FM-frequency deviation30kHz → Out 1 350mV_{RMS} f_{mod} = 1kHz, measured at audio-output Out 2 350mV_{RMS} Black Screen (1. Channel/2. Channel) Grid Screen (1. Channel/2. Channel)	Pin 12		 55/50 45/40		 dB dB
AM DEMODULATI0N (TDA4445B only) (f_{SC} = 39.2MHz, m = 80%, f_{mod} = 1kHz)						
V_I	Min. Input Voltage (Audio Output Signal - 3dB)	Pins 1-16		70		μV_{eff}
V_O	Output DC Voltage (V_{1-16} = 10mV_{eff} unmodulated)	Pin 6	3.3		4.5	V
I	Output DC Current (V_6 = 7.5V, V_3 = 3.5V)	Pin 6	0.3		1.2	mA
d	Distortion (V_{1-16} = 10mV, f_{mod} = 1kHz , m = 80%)	Pin 6		2.5	4	%
V_O	AF Output Voltage (V_{1-16} = 100mV_{eff}, m = 50% , f_{mod} = 10kHz)	Pin 6	500	700	900	mV_{eff}

4445-03.TBL

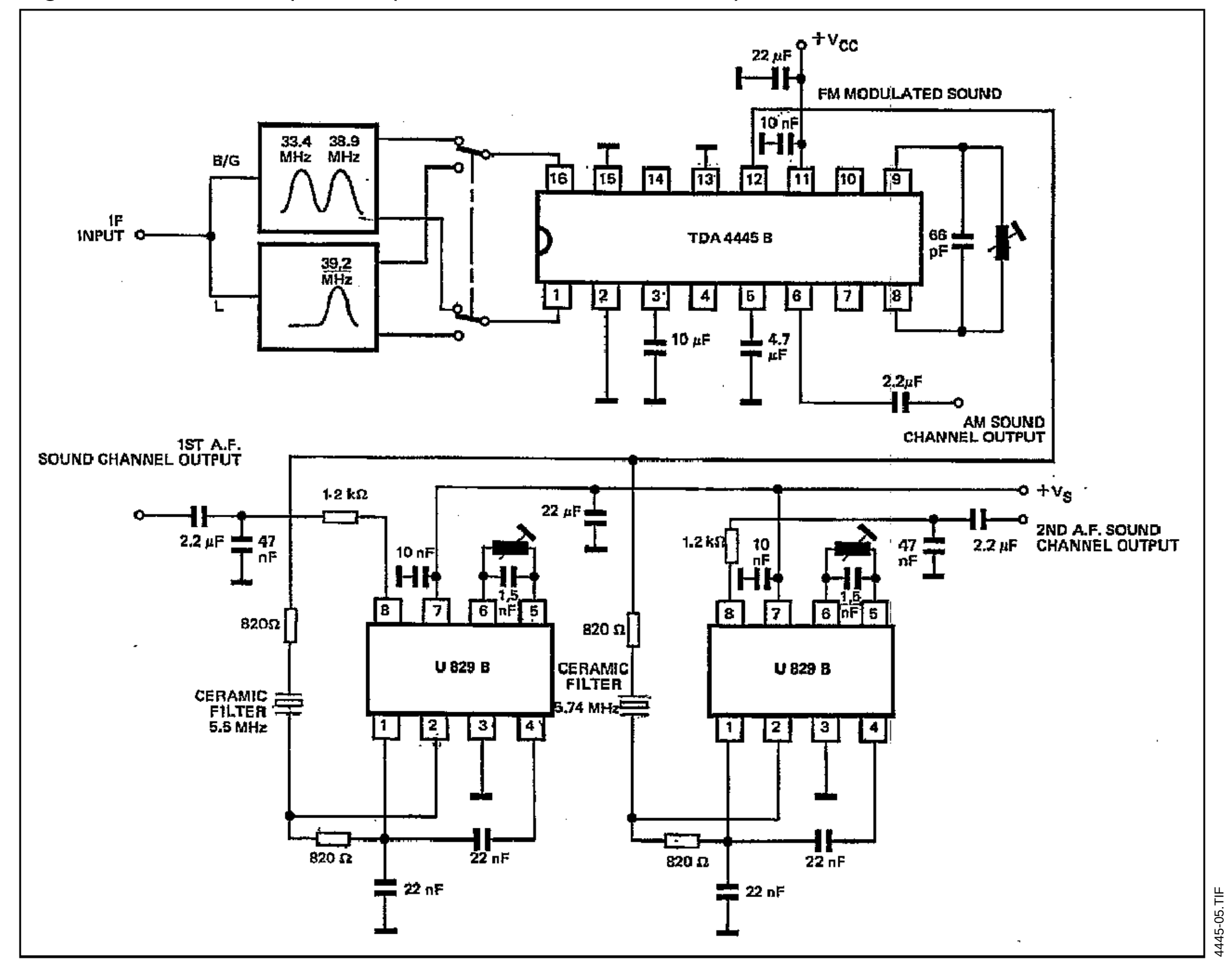
TYPICAL APPLICATION

Figure 1 : Quasi Parallel Sound Operation



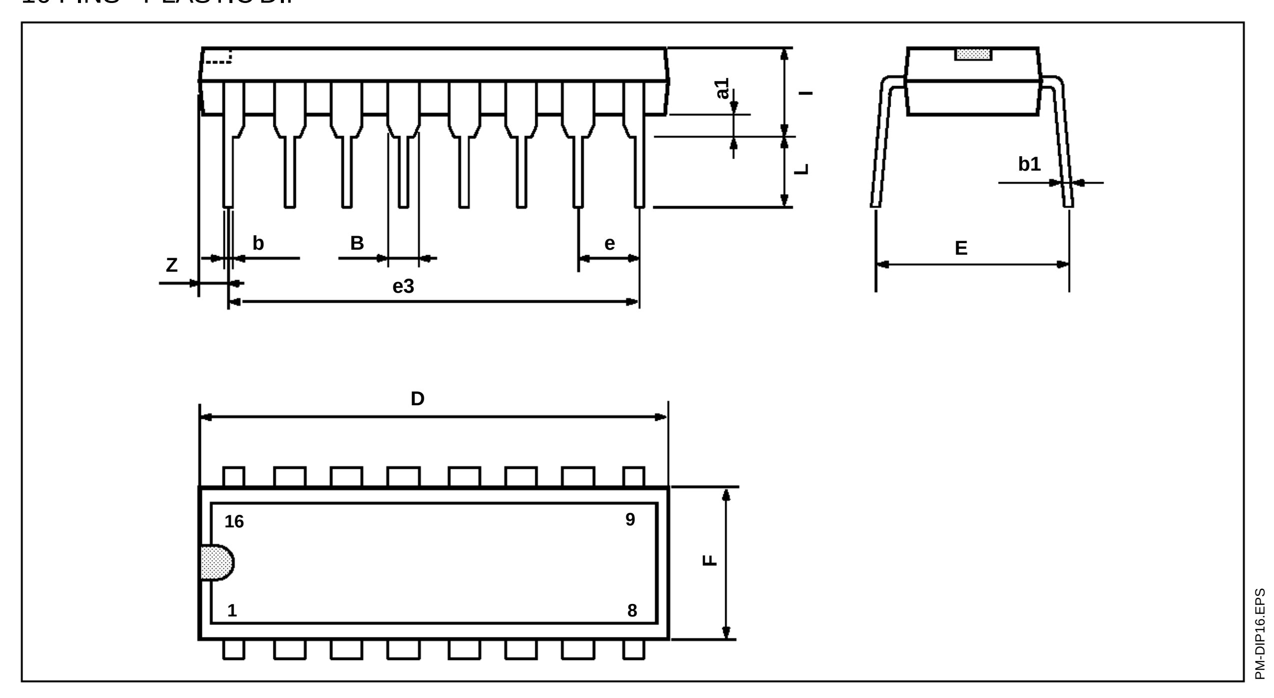
TYPICAL APPLICATION

Figure 2 : Bistandard Operation (FM stereo sound + AM sound)



PACKAGE MECHANICAL DATA

16 PINS - PLASTIC DIP



Dimensions	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
a1	0.51			0.020		
B	0.77		1.65	0.030		0.065
b		0.5			0.020	
b1		0.25			0.010	
D			20			0.787
E		8.5			0.335	
e		2.54			0.100	
e3		17.78			0.700	
F			7.1			0.280
i			5.1			0.201
L		3.3			0.130	
Z			1.27			0.050

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